

Atty. Docket No. PIA31223/DBE/US
Serial No: 10/751,212

Amendments to the Claims

Please add new Claims 5-18 and amend the remaining Claims as shown below.

Listing of Claims

1. (Currently amended) A method for packaging a semiconductor device, comprising the steps of:
 - (a) forming an Au bump on a bond pad of a wafer;
 - (b) dicing the wafer into a chip; and
 - (c) attaching the Au bump of the chip to a substrate to form a flip-chip bond using a thermo-pressure process, wherein the Au bump is connected directly to the chip and connected to the substrate through multi-stacked metal layers, and has a pillar shape.
2. (Currently Amended) The method of claim 1, ~~wherein, in the step (c), the Au bump is connected to the substrate through the multi-stacked metal layers include~~ an Ag layer and a Cu layer.
3. (Previously Presented) The method of claim 1, further comprising the step of:
 - (d) encapsulating the flip-chip bond using a nonconductive epoxy after step (c).
4. (Previously Presented) The method of claim 3, further comprising the step of:
 - (e) sawing the substrate to singulate individual packages.
5. (New) The method of claim 1, wherein the thermo-pressure process comprises attaching the Au bump to a copper pattern in the substrate.
6. (New) The method of claim 5, further comprising forming a plating lead on an opposite side of the substrate from the chip.

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7. (New) The method of claim 6, wherein forming the plating lead comprises plating an AgSn layer on the copper pattern.
8. (New) The method of claim 2, wherein the Ag layer directly contacts the Au bump.
9. (New) The method of claim 2, wherein the Cu layer directly contacts the substrate.
10. (New) A method for packaging a semiconductor device, comprising the steps of:
 - (a) forming a pillar-shaped Au bump directly on a bond pad of a wafer;
 - (b) dicing the wafer into a chip; and
 - (c) attaching the pillar-shaped Au bump of the chip to a substrate through a plurality of metal layers to form a flip-chip bond using a thermo-pressure process.
11. (New) The method of claim 10, wherein the plurality of metal layers includes an Ag layer and a Cu layer.
12. (New) The method of claim 10, further comprising the step of
 - (d) encapsulating the flip-chip bond using a nonconductive epoxy after step (c).

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13. (New) The method of claim 12, further comprising the step of
(c) sawing the substrate to singulate individual packages.
14. (New) The method of claim 10, wherein the thermo-pressure process comprises attaching the Au bump to a copper pattern in the substrate.
15. (New) The method of claim 14, further comprising forming a plating lead on an opposite side of the substrate from the chip.
16. (New) The method of claim 15, wherein forming the plating lead comprises plating an AgSn layer on the copper pattern.
17. (New) The method of claim 11, wherein the Ag layer directly contacts the Au bump.
18. (New) The method of claim 11, wherein the Cu layer directly contacts the substrate.